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BARR

August 1, 2012

Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
901 North 5th Street
Kansas City, KS 66101

Re: The Doe Run Company – Elvins/Rivermines Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 56 of the Unilateral Administrative Order (UAO) (CERCLA-07-2005-0169) for the referenced project and on behalf of The Doe Run Company, the progress report for the period June 1, 2012 through June 30, 2012 is enclosed. If you have any questions or comments, please call me at 573-638-5020 or Mark Nations at 573-518-0800.

Sincerely,

Ty L. Morris, P.E., R.G.
Vice President

TLM/jms
Enclosures
c: Mark Nations – TDRC
Matt Wohl – TDRC (electronic only)
Kathy Rangen – MDNR
Tim Skoglund – Barr Engineering

07WE 4.2

0400

Elvins/Rivermines Mine Tailings Site
Park Hills, Missouri
Removal Action - Monthly Progress Report
Period: June 1, 2012 – June 30, 2012

1. **Actions Performed and Problems Encountered This Period:**

   a. As has been previously discussed, clogging of the iron/sand media has been an issue with the pilot test. During the period, the bypass pipe that diverts flow around the ZVI/sand filter, aeration tank, and final sand filter remained active.

   b. On June 22, 2012, a one micron filtering apparatus was added to the bypass outlet to filter solids from the effluent. This was done for the purpose of taking the Whole Effluent Toxicity (WET) test samples described in paragraph 1e. When WET test samples were not being taken, flow was diverted around the filter. It should be noted that analytical samples were also taken in tandem with the WET test samples from the filtered effluent.

   c. Efforts to evaluate possible renovations to the iron/sand filter and system piping continued.

   d. Planning the work to revamp the existing treatment ponds continued. This effort is based on the roughing filter and media mixture utilized in the pilot test. It is anticipated that this work will likely start sometime in July.

   e. Analytical sampling and field measurements continued two to three times a week during the period. Sampling for a chronic WET test occurred on June 25, 2012, June 27, 2012, and June 29, 2012.

2. **Analytical Data and Results Received This Period:**

   a. The removal percentage for dissolved zinc in the effluent coming from the bypass pipe was found to be consistently over 99.9%. This equated to dissolved zinc levels consistently below 20 µg/L.

   b. The removal percentage for total zinc in the effluent coming from the bypass pipe was found to range between 91.5% and 95.1%. This equated to total zinc levels that ranged between 1.14 mg/L and 2.46 mg/L.

   c. Iron concentrations in the system effluent coming from the bypass pipe ranged between 0.54 mg/L and 0.69 mg/L. Iron concentrations in the system influent have been consistently near 0.0 mg/l.

   d. Total suspended solids concentrations in the system effluent were not tested during the period.

   e. Preliminary chronic WET test results for the filtered bypass effluent gave a No Observed Effects Concentration (NOEC) of 65% for survival and <12.5% for reproduction, and a Lowest Observed Effects Concentrations (LOEC) of 100% for survival and 12.5% for reproduction. Official results have not yet been determined.

   f. During this period, water samples were collected from just upstream of Old Missouri Highway 32, as well as from upstream and downstream of the confluence of the site discharge with Flat River. The analytical results for this event are included in this progress report.

   g. During this period, the Ambient Air Monitoring Reports for March 2012, First Quarter 2012, and April 2012 were received. Any issues identified in these reports are discussed below. Copies of these documents have been sent to your attention.

      The March 2012 Ambient Air Monitoring Report noted the following:
      - The action levels for lead and dust were not exceeded.
      - No samples were taken with the TSP monitors on 03/07/12 because the crew was in training.

- There was a QA blank filter associated with the Big River #4 TSP and PM_{10} monitors on 03/28/12.

The First Quarter 2012 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No samples were taken with the TSP monitors on 1/2/12 due to the holiday.
- There was a QA blank filter associated with the Rivermines #2 (North) TSP and PM_{10} monitors on 01/31/12
- No samples were taken with the Rivermines #1 (Office) TSP monitor on 02/28/12 due to mechanical failure. Upon discovery, the issue was corrected.
- There was a QA blank filter associated with the Rivermines #3 (Water Treatment Plant) TSP monitors and PM_{10} on 02/29/12.
- No samples were taken with the TSP monitors on 03/07/12 because the crew was in training.
- There was a QA blank filter associated with the Big River #4 TSP and PM_{10} monitors on 03/28/12.

The April 2012 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No samples were taken with the Big River #4 PM_{10} monitor on 04/21/12 due to mechanical failure. Upon discovery, the issue was corrected.

3. Developments Anticipated and Work Scheduled for Next Period:

a. Continue analytical sampling and field measurements three times a week. No WET tests are planned at this time, but official results from the samples taken in late June will be available.

b. Continue to operate the system with the bypass pipe.

c. Complete monthly water sampling activities as described in the Removal Action Work Plan.

d. Complete air monitoring activities as described in the Removal Action Work Plan.

e. Complete renovations to the iron/sand filter and system piping. This will include the installation of additional plumbing to the system, as well as a coarse iron/pea gravel media for insertion into the square tank. After this has been completed, flow through all the system components will commence. Renovations are likely to begin in August.

f. Begin renovations to the full-scale treatment system. This work is likely to begin in July.

4. Changes in Personnel:

a. None.

5. Issues or Problems Arising This Period:

a. None.

6. Resolution of Issues or Problems Arising This Period:

a. None.

End of Monthly Progress Report

July 05, 2012

Allison Olds
Barr Engineering Company
1001 Diamond Ridge
Suite 1100
Jefferson City, MO 65109
TEL: (573) 638-5007
FAX: (573) 638-5001

RE: Rivermines MTS-25/86-0009 **WorkOrder:** 12061227

Dear Allison Olds:

TEKLAB, INC received 4 samples on 6/28/2012 10:20:00 AM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Michael L. Austin
Project Manager
(618)344-1004 ex 16
MAustin@teklabinc.com

Client: Barr Engineering Company
Client Project: Rivermines MTS-25/86-0009

Work Order: 12061227
Report Date: 05-Jul-12

This reporting package includes the following:

Cover Letter	1
Report Contents	2
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Client: Barr Engineering Company
Work Order: 12061227

Client Project: Rivermines MTS-25/86-0009
Report Date: 05-Jul-12

Abbr Definition

CCV Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.

DF Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.

DNI Did not ignite

DUP Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.

ICV Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.

IDPH IL Dept. of Public Health

LCS Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).

LCSD Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).

MB Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.

MDL Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

MS Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).

MSD Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).

MW Molecular weight

ND Not Detected at the Reporting Limit

NELAP NELAP Accredited

PQL Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).

RL The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.

RPD Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).

SPK The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.

Surr Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.

TNTC Too numerous to count (> 200 CFU)

Qualifiers

- Unknown hydrocarbon

B - Analyte detected in associated Method Blank

E - Value above quantitation range

H - Holding times exceeded

M - Manual Integration used to determine area response

ND - Not Detected at the Reporting Limit

R - RPD outside accepted recovery limits

S - Spike Recovery outside recovery limits

X - Value exceeds Maximum Contaminant Level

Client: Barr Engineering Company
Client Project: Rivermines MTS-25/86-0009

Work Order: 12061227
Report Date: 05-Jul-12

Cooler Receipt Temp: 0.4 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmcclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2013	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2013	Collinsville
Illinois	IDPH	17584		4/30/2013	Collinsville
Kentucky	UST	0073		5/26/2013	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

Client: Barr Engineering Company
Work Order: 12061227
Client Project: Rivermines MTS-25/86-0009
Report Date: 05-Jul-12
Lab ID: 12061227-001
Client Sample ID: RM-001
Matrix: AQUEOUS
Collection Date: 06/27/2012 7:30

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	500		**903**	mg/L	50	06/28/2012 22:00	R165309
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		**7.62**		1	06/29/2012 8:08	R165295
STANDARD METHODS 2340 C								
Hardness, as (CaCO3)		5		**1140**	mg/L	1	06/28/2012 13:20	R165292
STANDARD METHODS 2540 D								
Total Suspended Solids		6		**< 6**	mg/L	1	06/29/2012 12:53	R165324
STANDARD METHODS 2540 F								
Solids, Settleable		0.1		**< 0.1**	ml/L	1	06/28/2012 13:06	R165271
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		**1.2**	mg/L	1	06/29/2012 19:10	R165372
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		**6.90**	µg/L	1	06/29/2012 23:39	79363
Zinc	NELAP	10.0		**10200**	µg/L	1	06/29/2012 23:39	79363
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		**9.00**	µg/L	1	06/29/2012 18:53	79360
Zinc	NELAP	10.0		**10800**	µg/L	1	06/29/2012 18:53	79360
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00	X	**8.14**	µg/L	1	06/29/2012 17:09	79361
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00	X	**8.49**	µg/L	1	06/29/2012 13:45	79351

Client: Barr Engineering Company
Work Order: 12061227
Client Project: Rivermines MTS-25/86-0009
Report Date: 05-Jul-12
Lab ID: 12061227-002
Client Sample ID: RM-Dup
Matrix: AQUEOUS
Collection Date: 06/27/2012 7:45

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	500		**938**	mg/L	50	06/28/2012 22:27	R165309
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		**7.67**		1	06/29/2012 8:11	R165295
STANDARD METHODS 2340 C								
Hardness, as (CaCO3)		5		**1460**	mg/L	1	06/28/2012 13:20	R165292
STANDARD METHODS 2540 D								
Total Suspended Solids		6		**8**	mg/L	1	06/29/2012 12:53	R165324
STANDARD METHODS 2540 F								
Solids, Settleable		0.1		**< 0.1**	ml/L	1	06/28/2012 13:06	R165271
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		**1.0**	mg/L	1	06/29/2012 19:17	R165372
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		**6.70**	µg/L	1	06/29/2012 23:45	79363
Zinc	NELAP	10.0	S	**10300**	µg/L	1	06/29/2012 23:45	79363
Zn - Sample concentration was greater than 5 times the spike concentration.								
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		**9.10**	µg/L	1	06/29/2012 18:59	79360
Zinc	NELAP	10.0	S	**10900**	µg/L	1	06/29/2012 18:59	79360
Zn - Sample concentration was greater than 5 times the spike concentration.								
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00	X	**8.62**	µg/L	1	06/29/2012 17:27	79361
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00	X	**8.56**	µg/L	1	06/29/2012 13:55	79351

Client: Barr Engineering Company
Work Order: 12061227
Client Project: Rivermines MTS-25/86-0009
Report Date: 05-Jul-12
Lab ID: 12061227-003
Client Sample ID: RM-DS
Matrix: AQUEOUS
Collection Date: 06/27/2012 9:15

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	500		**850**	mg/L	50	06/29/2012 17:16	R165364
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		**7.95**		1	06/29/2012 8:12	R165295
STANDARD METHODS 2340 C								
Hardness, as (CaCO3)		5		**1120**	mg/L	1	06/28/2012 13:20	R165292
STANDARD METHODS 2540 D								
Total Suspended Solids		6	R	**8**	mg/L	1	06/29/2012 12:53	R165324
% RPD was outside the QC limits due to low level results. When duplicate results for TSS are 20 mg/L or less and have a difference of no greater than the PQL, the results are considered within the precision of the test method and are reportable.								
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		**2.5**	mg/L	1	06/29/2012 19:55	R165372
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	06/30/2012 0:14	79363
Zinc	NELAP	10.0		**55.1**	µg/L	1	06/30/2012 0:14	79363
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	06/29/2012 19:28	79360
Zinc	NELAP	10.0		**258**	µg/L	1	06/29/2012 19:28	79360
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00	X	**8.21**	µg/L	1	07/02/2012 13:55	79361
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00		**< 2.00**	µg/L	1	06/29/2012 14:06	79351

Client: Barr Engineering Company
Work Order: 12061227
Client Project: Rivermines MTS-25/86-0009
Report Date: 05-Jul-12
Lab ID: 12061227-004
Client Sample ID: RM-US
Matrix: AQUEOUS
Collection Date: 06/27/2012 9:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	20		**56**	mg/L	2	06/29/2012 17:32	R165364
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		**7.71**		1	06/29/2012 8:13	R165295
STANDARD METHODS 2340 C								
Hardness, as (CaCO3)		5		**300**	mg/L	1	06/28/2012 13:20	R165292
STANDARD METHODS 2540 D								
Total Suspended Solids		6		**14**	mg/L	1	06/29/2012 12:53	R165324
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		**7.6**	mg/L	1	06/29/2012 20:01	R165372
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	06/30/2012 0:20	79363
Zinc	NELAP	10.0		**< 10.0**	µg/L	1	06/30/2012 0:20	79363
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	06/29/2012 19:34	79360
Zinc	NELAP	10.0		**< 10.0**	µg/L	1	06/29/2012 19:34	79360
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00		**4.55**	µg/L	1	07/02/2012 13:59	79361
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00		**< 2.00**	µg/L	1	06/29/2012 14:09	79351

Client: Barr Engineering Company
Work Order: 12061227
Client Project: Rivermines MTS-25/86-0009
Report Date: 05-Jul-12

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
12061227-001	RM-001	Aqueous	5	06/27/2012 7:30
12061227-002	RM-Dup	Aqueous	5	06/27/2012 7:45
12061227-003	RM-DS	Aqueous	5	06/27/2012 9:15
12061227-004	RM-US	Aqueous	5	06/27/2012 9:00

Client: Barr Engineering Company
Client Project: Rivermines MTS-25/86-0009

Work Order: 12061227
Report Date: 05-Jul-12

Sample ID	Client Sample ID / Test Name	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
12061227-001A	RM-001	06/27/2012 7:30	06/28/2012 10:20		
	Standard Methods 2540 F				06/28/2012 13:06
12061227-001B	RM-001	06/27/2012 7:30	06/28/2012 10:20		
	EPA 600 375.2 Rev 2.0 1993 (Total)				06/28/2012 22:00
	Standard Method 4500-H B, Laboratory Analyzed				06/29/2012 8:08
	Standard Methods 2340 C				06/28/2012 13:20
	Standard Methods 2540 D				06/29/2012 12:53
12061227-001C	RM-001	06/27/2012 7:30	06/28/2012 10:20		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			06/28/2012 16:35	06/29/2012 18:53
	Standard Methods 3030 E, 3113 B, Metals by GFAA			06/28/2012 17:10	06/29/2012 17:09
12061227-001D	RM-001	06/27/2012 7:30	06/28/2012 10:20		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			06/28/2012 18:22	06/29/2012 23:39
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			06/28/2012 14:05	06/29/2012 13:45
12061227-001E	RM-001	06/27/2012 7:30	06/28/2012 10:20		
	Standard Methods 5310 C, Organic Carbon				06/29/2012 19:10
12061227-002A	RM-Dup	06/27/2012 7:45	06/28/2012 10:20		
	Standard Methods 2540 F				06/28/2012 13:06
12061227-002B	RM-Dup	06/27/2012 7:45	06/28/2012 10:20		
	EPA 600 375.2 Rev 2.0 1993 (Total)				06/28/2012 22:27
	Standard Method 4500-H B, Laboratory Analyzed				06/29/2012 8:11
	Standard Methods 2340 C				06/28/2012 13:20
	Standard Methods 2540 D				06/29/2012 12:53
12061227-002C	RM-Dup	06/27/2012 7:45	06/28/2012 10:20		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			06/28/2012 16:35	06/29/2012 18:59
	Standard Methods 3030 E, 3113 B, Metals by GFAA			06/28/2012 17:10	06/29/2012 17:27
12061227-002D	RM-Dup	06/27/2012 7:45	06/28/2012 10:20		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			06/28/2012 18:22	06/29/2012 23:45
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			06/28/2012 14:05	06/29/2012 13:55
12061227-002E	RM-Dup	06/27/2012 7:45	06/28/2012 10:20		
	Standard Methods 5310 C, Organic Carbon				06/29/2012 19:17
12061227-003A	RM-DS	06/27/2012 9:15	06/28/2012 10:20		
	Standard Methods 2340 C				06/28/2012 13:20
	Standard Methods 2540 D				06/29/2012 12:53
12061227-003B	RM-DS	06/27/2012 9:15	06/28/2012 10:20		
	EPA 600 375.2 Rev 2.0 1993 (Total)				06/29/2012 17:16
	Standard Method 4500-H B, Laboratory Analyzed				06/29/2012 8:12

Client: Barr Engineering Company
Client Project: Rivermines MTS-25/86-0009

Work Order: 12061227
Report Date: 05-Jul-12

Sample ID	Client Sample ID / Test Name	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
12061227-003C	RM-DS	06/27/2012 9:15	06/28/2012 10:20		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			06/28/2012 16:35	06/29/2012 19:28
	Standard Methods 3030 E, 3113 B, Metals by GFAA			06/28/2012 17:10	07/02/2012 13:55
12061227-003D	RM-DS	06/27/2012 9:15	06/28/2012 10:20		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			06/28/2012 18:22	06/30/2012 0:14
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			06/28/2012 14:05	06/29/2012 14:06
12061227-003E	RM-DS	06/27/2012 9:15	06/28/2012 10:20		
	Standard Methods 5310 C, Organic Carbon				06/29/2012 19:55
12061227-004A	RM-US	06/27/2012 9:00	06/28/2012 10:20		
	Standard Methods 2340 C				06/28/2012 13:20
	Standard Methods 2540 D				06/29/2012 12:53
12061227-004B	RM-US	06/27/2012 9:00	06/28/2012 10:20		
	EPA 600 375.2 Rev 2.0 1993 (Total)				06/29/2012 17:32
	Standard Method 4500-H B, Laboratory Analyzed				06/29/2012 8:13
12061227-004C	RM-US	06/27/2012 9:00	06/28/2012 10:20		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			06/28/2012 16:35	06/29/2012 19:34
	Standard Methods 3030 E, 3113 B, Metals by GFAA			06/28/2012 17:10	07/02/2012 13:59
12061227-004D	RM-US	06/27/2012 9:00	06/28/2012 10:20		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			06/28/2012 18:22	06/30/2012 0:20
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			06/28/2012 14:05	06/29/2012 14:09
12061227-004E	RM-US	06/27/2012 9:00	06/28/2012 10:20		
	Standard Methods 5310 C, Organic Carbon				06/29/2012 20:01

Client: Barr Engineering Company
Client Project: Rivermines MTS-25/86-0009

Work Order: 12061227
Report Date: 05-Jul-12

EPA 600 375.2 REV 2.0 1993 (TOTAL)

Batch R165309 **SampType:** MBLK Units mg/L
SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		< 10						06/28/2012

Batch R165309 **SampType:** LCS Units mg/L
SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		19	20	0	97.4	90	110	06/28/2012

Batch R165309 **SampType:** MS Units mg/L
SampID: 12061227-002BMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	500		1390	500	937.5	90.1	90	110	06/28/2012

Batch R165309 **SampType:** MSD Units mg/L RPD Limit 10
SampID: 12061227-002BMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate	500		1390	500	937.5	90.3	1388	0.07	06/28/2012

Batch R165364 **SampType:** MBLK Units mg/L
SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		< 10						06/29/2012

Batch R165364 **SampType:** LCS Units mg/L
SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		19	20	0	94.2	90	110	06/29/2012

STANDARD METHOD 4500-H B, LABORATORY ANALYZED

Batch R165295 **SampType:** LCS Units
SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lab pH	1.00		6.99	7.00	0	99.9	99.1	100.8	06/29/2012

Batch R165295 **SampType:** DUP Units RPD Limit 10
SampID: 12061227-001BDUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		7.66				7.620	0.52	06/29/2012

Client: Barr Engineering Company
Client Project: Rivermines MTS-25/86-0009

Work Order: 12061227
Report Date: 05-Jul-12

STANDARD METHOD 4500-H B, LABORATORY ANALYZED

Batch R165295 **SampType:** DUP Units RPD Limit 10
SampID: 12061227-002BDUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		**7.68**				7.670	0.13	06/29/2012

Batch R165295 **SampType:** DUP Units RPD Limit 10
SampID: 12061227-003BDUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		**7.95**				7.950	0.00	06/29/2012

Batch R165295 **SampType:** DUP Units RPD Limit 10
SampID: 12061227-004BDUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		**7.72**				7.710	0.13	06/29/2012

STANDARD METHODS 2340 C

Batch R165292 **SampType:** MBLK Units mg/L
SampID: MB-R165292

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO3)	5		**< 5**						06/28/2012

Batch R165292 **SampType:** LCS Units mg/L
SampID: LCS-R165292

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO3)	5		**1000**	1000	0	100.0	90	110	06/28/2012

Batch R165292 **SampType:** MS Units mg/L
SampID: 12061227-004AMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO3)	5		**660**	400	300.0	90.0	85	115	06/28/2012

Batch R165292 **SampType:** MSD Units mg/L RPD Limit 10
SampID: 12061227-004AMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Hardness, as (CaCO3)	5		**700**	400	300.0	100.0	660.0	5.88	06/28/2012

STANDARD METHODS 2540 D

Batch R165324 **SampType:** MBLK Units mg/L
SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Suspended Solids	6.00		**< 6.00**						06/29/2012
Total Suspended Solids	6		**< 6**						06/29/2012

Client: Barr Engineering Company **Work Order:** 12061227

Client Project: Rivermines MTS-25/86-0009 **Report Date:** 05-Jul-12

STANDARD METHODS 2540 D

Batch R165324 **SampType:** LCS Units mg/L

SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Suspended Solids	6		**102**	100	0	102.0	85	115	06/29/2012
Total Suspended Solids	6		**107**	100	0	107.0	85	115	06/29/2012
Total Suspended Solids	6		**97**	100	0	97.0	85	115	06/29/2012
Total Suspended Solids	6		**106**	100	0	106.0	85	115	06/29/2012

Batch R165324 **SampType:** DUP Units mg/L RPD Limit **15**

SampID: 12061227-003A DUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Suspended Solids	6	R	**10**				8.000	22.22	06/29/2012

STANDARD METHODS 5310 C, ORGANIC CARBON

Batch R165372 **SampType:** MBLK Units mg/L

SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	1.0		**< 1.0**						06/29/2012

Batch R165372 **SampType:** LCS Units mg/L

SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	5.0		**52.0**	48.2	0	107.8	90	110	06/29/2012

Batch R165372 **SampType:** MS Units mg/L

SampID: 12061227-004EMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	1.0		**12.9**	5.0	7.600	106.4	85	115	06/29/2012

Batch R165372 **SampType:** MSD Units mg/L RPD Limit **10**

SampID: 12061227-004EMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)	1.0		**12.3**	5.0	7.600	93.8	12.92	5.00	06/29/2012

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

Batch 79363 **SampType:** MBLK Units µg/L

SampID: MB-79363

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**< 2.00**	2.00	0	0	-100	100	06/29/2012
Zinc	10.0		**< 10.0**	10.0	0	0	-100	100	06/29/2012

Client: Barr Engineering Company
Work Order: 12061227
Client Project: Rivermines MTS-25/86-0009
Report Date: 05-Jul-12

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

Batch 79363 **SampType:** LCS Units µg/L
SampID: LCS-79363

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**44.5**	50.0	0	89.0	85	115	06/29/2012
Zinc	10.0		**478**	500	0	95.6	85	115	06/29/2012

Batch 79363 **SampType:** MS Units µg/L
SampID: 12061227-002DMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**47.3**	50.0	6.7	81.2	75	125	06/29/2012
Zinc	10.0	S	**10500**	500	10290	44.0	75	125	06/29/2012

Batch 79363 **SampType:** MSD Units µg/L RPD Limit **20**
SampID: 12061227-002DMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cadmium	2.00		**47.3**	50.0	6.7	81.2	47.3	0.00	06/30/2012
Zinc	10.0	S	**10400**	500	10290	28.0	10510	0.76	06/30/2012

EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)

Batch 79360 **SampType:** MBLK Units µg/L
SampID: MB-79360

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**< 2.00**	2.00	0	0	-100	100	06/29/2012
Zinc	10.0		**< 10.0**	10.0	0	27.0	-100	100	06/29/2012

Batch 79360 **SampType:** LCS Units µg/L
SampID: LCS-79360

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**47.6**	50.0	0	95.2	85	115	06/29/2012
Zinc	10.0		**504**	500	0	100.8	85	115	06/29/2012

Batch 79360 **SampType:** MS Units µg/L
SampID: 12061227-002CMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**54.3**	50.0	9.1	90.4	75	125	06/29/2012
Zinc	10.0		**11300**	500	10900	76.0	75	125	06/29/2012

Batch 79360 **SampType:** MSD Units µg/L RPD Limit **20**
SampID: 12061227-002CMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cadmium	2.00		**53.6**	50.0	9.1	89.0	54.3	1.30	06/29/2012
Zinc	10.0	S	**11200**	500	10900	70.0	11280	0.27	06/29/2012

Client: Barr Engineering Company

Work Order: 12061227

Client Project: Rivermines MTS-25/86-0009

Report Date: 05-Jul-12

STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA

Batch 79361 **SampType:** MBLK Units µg/L

SampID: MB-79361

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		< 2.00	2.00	0	0	-100	100	06/29/2012

Batch 79361 **SampType:** LCS Units µg/L

SampID: LCS-79361

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		14.8	15.0	0	98.7	85	115	06/29/2012

Batch 79361 **SampType:** MS Units µg/L

SampID: 12061227-001CMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	4.00		23.0	15.0	8.1386	99.1	70	130	06/29/2012

Batch 79361 **SampType:** MSD Units µg/L RPD Limit **20**

SampID: 12061227-001CMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lead	4.00		23.8	15.0	8.1386	104.3	23.0029	3.33	06/29/2012

STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)

Batch 79351 **SampType:** MBLK Units µg/L

SampID: MB-79351

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		< 2.00	2.00	0	0	-100	100	06/29/2012

Batch 79351 **SampType:** LCS Units µg/L

SampID: LCS-79351

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		14.3	15.0	0	95.3	85	115	06/29/2012

Batch 79351 **SampType:** MS Units µg/L

SampID: 12061227-001DMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		21.5	15.0	8.4904	86.8	70	130	06/29/2012

Batch 79351 **SampType:** MSD Units µg/L RPD Limit **20**

SampID: 12061227-001DMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lead	2.00		21.9	15.0	8.4904	89.3	21.5035	1.74	06/29/2012

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Barr Engineering Company
Work Order: 12061227
Client Project: Rivermines MTS-25/86-0009
Report Date: 05-Jul-12

Carrier: Ron Korte
Received By: SRH

Completed by: Timothy W. Mathis
On: 28-Jun-12

Reviewed by: Elizabeth A. Hurley
On: 28-Jun-12

Pages to follow: Chain of custody [1] Extra pages included [0]

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C	0.4		
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice	☐		
Chain of custody present?	Yes ☑	No ☐					
Chain of custody signed when relinquished and received?	Yes ☑	No ☐					
Chain of custody agrees with sample labels?	Yes ☑	No ☐					
Samples in proper container/bottle?	Yes ☑	No ☐					
Sample containers intact?	Yes ☑	No ☐					
Sufficient sample volume for indicated test?	Yes ☑	No ☐					
All samples received within holding time?	Yes ☑	No ☐					
Reported field parameters measured:	Field ☐	Lab ☑	NA ☐				
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐					
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.							
Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑				
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑				
Water - pH acceptable upon receipt?	Yes ☑	No ☐					
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑				

Any No responses must be detailed below or on the COC.

Custody seal(s) intact on shipping container/cooler.

Print Form

Teklab Chain of Custody

Pg. 1 of 1 Workorder 1206227

5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618)344-1004 ~ Fax:(618)344-1005

Barr Engineering Co.
1001 Diamond Ridge, Suite 1100
Jefferson City | MO | 65109
Rivermines MTS - 25/86-0009

Are the samples chilled? (•) Yes ( ) No with: (•) Ice ( ) Blue ice

Preserved in ~~Lab~~ ☒ Field preservatives✓ K.P. 6/28/12

Cooler Temp 0.4°C Sampler Chris Schulte

Comments: Invoice to Mark Nations. Results to Allison Olds and Mark Nations, mnations@doerun.com
Matrix is surface water.
Metals = Cd, Pb, Zn
custody seal intact when courier picked up

Contact Allison Olds eMail aolds@barr.com Phone 573-638-5007 Requested Due Date Standard Billing/PO Per contract with Doe Run

Lab Use	Sample ID	Sample Date/Time	Preservative	Matrix	pH	T.S.S.	Sulfate	Settleable Solids	T.O.C.	Total Metals	Dissolved Metals	Hardness				
1206227 001	RM-001	6/27/12 7:30	Unpres 5	Aqueous	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐
002	RM-Dup	7:45	Unpres 5	Aqueous	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐
003	RM-DS	9:15	Unpres 5	Aqueous	☒	☒	☒	☐	☒	☒	☒	☒	☐	☐	☐	☐
004	RM-US	9:00	Unpres 5	Aqueous	☒	☒	☒	☐	☒	☒	☒	☒	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Teklab Inc Courier Pick Up

Relinquished By *	Date/Time	Received By	Date/Time
[signature] / Barr	6/27/12 12:30	Ron [signature]	6/28/12 8:45
Ron [signature]	6/28/12 10:20	Stephanie Haynes	6/28/12 10:20AM

* The individual signing this agreement on behalf of client acknowledges that they have read and understand the terms of this agreement and that they have the authority to sign on behalf of client.